

2.0 PURPOSE OF ACTION AND NEED FOR POWER

2.1 PURPOSE OF THE PROPOSED ACTION

In compliance with the National Environmental Policy Act (NEPA), the Proposed Action addressed in this PDEA is continued operation and maintenance of the Oroville Facilities for electric power generation, including implementation of any terms and conditions to be considered for inclusion in a new FERC hydroelectric license.

The existing license for the Oroville Facilities (issued by FERC on February 11, 1957) will expire on January 31, 2007. DWR is seeking a new federal license; therefore, the purpose of the Proposed Action is to continue generating electric power while continuing to meet existing commitments and comply with regulations pertaining to water supply, flood control, the environment, and recreational opportunities. This PDEA contains evaluations of three alternatives: a No-Action Alternative, Alternative 1 (the Proposed Action), and Alternative 2. Alternative 2 is an analytical tool to evaluate a variety of potential protection, mitigation, and enhancement (PM&E) measures not included in the Proposed Action. FERC will use the results of these evaluations to prepare a NEPA document to support its decision-making under the Federal Power Act (FPA) and other federal laws.

It is critical that any new license terms and conditions allow DWR to meet all of its commitments related to the Oroville Facilities. Water supply, flood management, environmental commitments, and recreation are identified in Section 2.3, with additional information provided in Section 3.1 and Appendix B.

2.2 NEED FOR POWER

The continued operation of the Oroville Facilities for electric power generation alleviates the need for new power resources that would otherwise be required to replace the 762 MW of capacity and roughly 2.4 million MWh per year of energy generated by the three power plants. This power capacity and generation is vital to the State of California, in that it provides a large portion of the electricity needed to pump water through the SWP at a lower cost than potential replacement power sources. Not only would replacement power sources be more expensive and lead to higher costs for SWP users, there is much uncertainty surrounding the future availability of such sources. For example, given current power supply and demand trends in California, the California Energy Commission (CEC) estimates that approximately 10,000 MW of additional generation (including reserves) or power demand reduction will be needed to meet the needs of the State's growing economy by 2013 (CEC 2003a). The CEC also predicts California only has adequate power supplies and planned transmission upgrades to meet projected demands through the year 2009, and this assumes that a number of adverse scenarios do not occur. If such adverse circumstances as earlier-than-expected retirement of older generation plants or more frequent dry water years do occur, California's power plant reserve margins could reach unacceptable levels as early as 2006 (CEC 2003b).

Thus, continued operation of the Oroville Facilities for electric power generation is critical to DWR achieving its mission of providing a reliable and affordable supply of water.

Power operations of the Oroville Facilities are heavily influenced by SWP-related agreements and other commitments. Continued operation and maintenance of the power features of the Oroville Facilities must be consistent with the operational criteria dictated by the operation of the entire SWP. The operation of the SWP is further described in Section 2.3.

Oroville Facilities operations are planned and scheduled in concert with other SWP and U.S. Bureau of Reclamation (USBR) Central Valley Project (CVP) water storage, pumping, and conveyance facilities. The primary operating function of the Oroville Facilities power plants is to provide electricity to SWP pumps that move water through the SWP system. Overall, the SWP uses more energy than it produces. Thus, any decrease in power generation at the Oroville Facilities would need to be offset by increased purchases of energy from other resources and/or by construction of new power generating facilities. In 2000, the SWP required 9,190,000 MWh of generation to meet pumping requirements and station service usage. In the same year, the Oroville Facilities generated roughly 2,760,000 MWh of that total, which amounts to nearly one-third of the system's total requirements.

By generating hydroelectric power, the Oroville Facilities help reduce the amount of generation that is needed from fossil fuel power plants, thereby avoiding the emission of such pollutants as hydrocarbons, nitrogen oxides, carbon monoxide, and particulate matter. Hydroelectric generation at the project's facilities possibly avoids the construction of new power plant facilities, thus avoiding other adverse environmental effects. Power from the Oroville Facilities contributes to a diversified generation mix and helps meet power needs within and beyond the region. Regional power benefits from the Oroville Facilities include those often referred to as ancillary system benefits, including spinning reserves, non-spinning reserves, peaking capacity, and grid stability. Additional information regarding power operations and benefits is included in Chapter 6.0.

2.3 SWP OPERATIONS RELATED TO THE OROVILLE FACILITIES

The continued operation and maintenance of the Oroville Facilities for hydroelectric power generation must be consistent with several other important DWR commitments. These commitments are briefly described below and include water supply, flood management, and a wide range of environmental and recreation measures. Additional information regarding these commitments is found in Section 3.1.

2.3.1 Water Supply

2.3.1.1 Overview of the State Water Project

The Oroville Facilities were developed as a major part of the SWP, a water storage and delivery system of reservoirs, aqueducts, power plants, and pumping plants. The main purpose of the SWP is to provide a reliable and affordable supplemental water supply to urban and agricultural water users throughout California.

The SWP deliveries ranged between 1.63 million acre-feet (maf) and 3.5 maf between the years 1999 and 2003. About 23 million of California's estimated 34 million residents directly benefit from SWP water. These supplies also irrigate nearly 600,000 acres of farmland, mainly in the San Joaquin Valley (DWR 2002; pers. comm., Quan 2004).

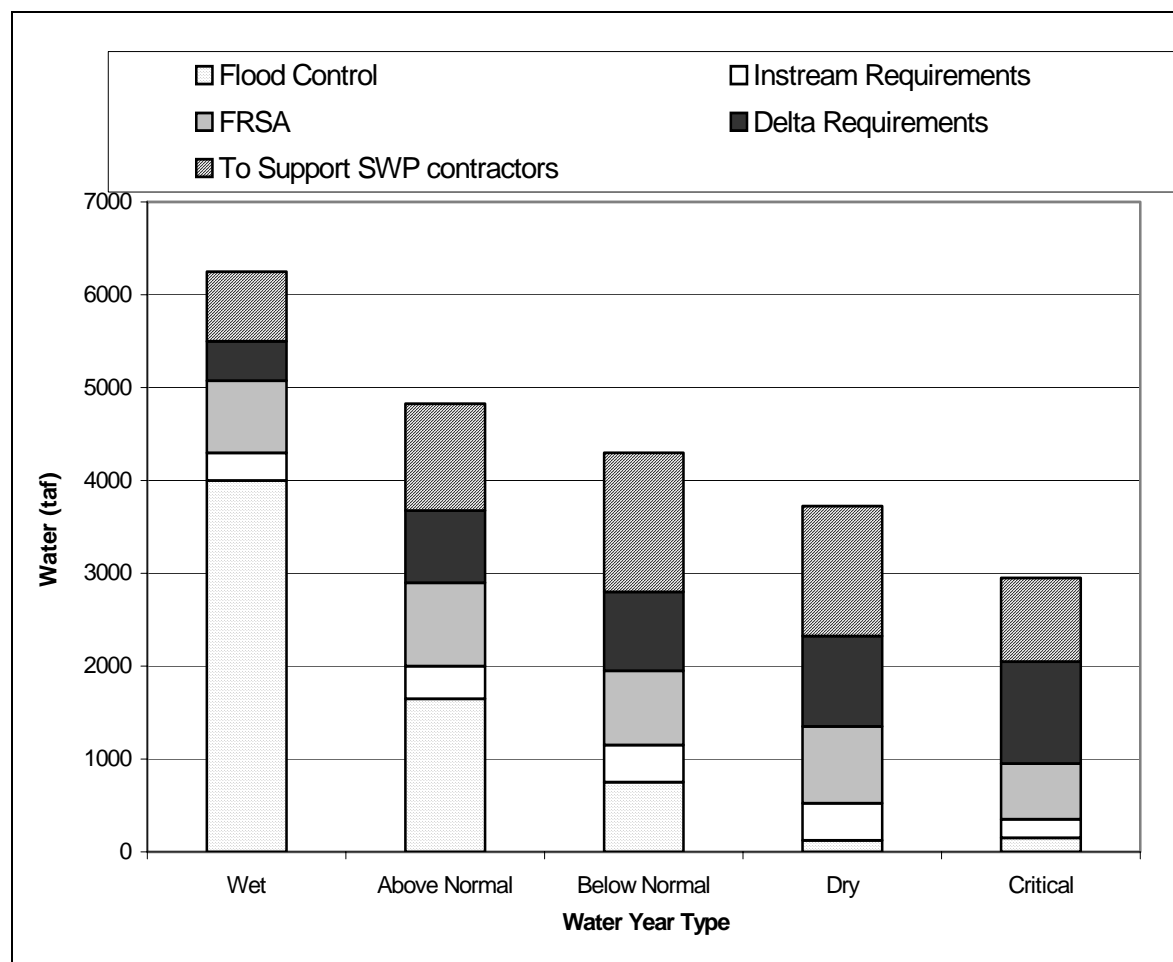
2.3.1.2 Role of the Oroville Facilities within the State Water Project

The Oroville Facilities are located at the foot of the Sierra Nevada in Northern California on the Feather River near Oroville. The Oroville Facilities have the capacity to store more than 3.5 maf of water, and account for a large portion of the SWP's water capture and storage each year. Water released from the Oroville Facilities into the Feather River flows downstream into the Sacramento River.

2.3.1.3 Lake Oroville Water Releases

As shown in Figure 2.3-1, water stored in Lake Oroville is released to meet a variety of contractual, flood control, and environmental commitments in all types of water year conditions:

- Flood control, in compliance with U.S. Army Corps of Engineers (USACE) criteria;
- Feather River Service Area (FRSA) water supply entitlements;
- Water quality control under State Water Resources Control Board (SWRCB) Decision 1641 (D-1641) and the *1995 Water Quality Control Plan for the San Francisco Bay/Sacramento–San Joaquin Delta Estuary* (1995 WQCP);
- Feather River riparian flows;
- Instream flow requirements for the Feather River;
- Water temperature control in the Feather River below Thermalito Diversion Dam; and
- Water supply for the State Water Project contractors.



taf = thousand acre-feet

Source: Data provided by DWR

Figure 2.3-1. Primary uses of Lake Oroville water releases.

The flood control, contractual, fishery, water quality, and other environmental obligations are defined in numerous operating agreements that specify timing, flow limits, storage amounts, and/or constraints on water releases. Contractual obligations are met through scheduled releases of water from various points within the Oroville Facilities, including Lake Oroville, Thermalito Diversion Dam, Thermalito Afterbay, and the Thermalito Afterbay Outlet, which discharges into the Feather River. The scheduling of water releases to meet all of these delivery obligations requires a tremendous amount of planning, forecasting, and interagency coordination among DWR and other agencies.

2.3.2 Flood Management

Oroville Dam provided downstream flood protection even before it was completed. In 1964, while the dam was under construction, it prevented millions of dollars of property damage and saved lives by impounding floodwaters. Today, flood management remains one of the major benefits of this dam. The Oroville Facilities are an integral component of the Sacramento River Flood Control Project, the flood management system for areas along the Feather and Sacramento Rivers downstream

of Oroville Dam. They supply flood protection benefits to Oroville, Marysville, Yuba City, many smaller communities, and as far downstream as the Sacramento metropolitan area. The Oroville Facilities also protect about 283,000 acres of developed agricultural lands and a variety of transportation and other public utility infrastructure. The total value of structures and contents in the areas along the Feather River downstream of Oroville Dam is nearly \$3 billion (USACE 1999). It also has been estimated that during the 30 years before the construction of the Oroville Facilities, property affected by flooding along the Feather and Sacramento Rivers experienced more than \$400 million in actual flood damages, and flood damages avoided during the 1997 single flood event were more than \$1 billion (United States Society on Dams 2004). Project flood control operations, which are described further in Section 5.4.1, also are critical to maintaining the structural integrity of the many levees found along the Feather River and along the Sacramento River below the confluence with the Feather River. USACE helped fund the construction of Oroville Dam and has jurisdiction over flood control operations. Under the terms of the FERC license, DWR shall collaborate with USACE in formulating a program of operation for the project in the interest of flood control. Currently, the maximum flood storage space in Lake Oroville is 750,000 af.

2.3.3 Recreation and Environmental Commitments

The Oroville Facilities are also operated and maintained to help meet recreation needs, as well as protect and enhance fish and wildlife species and their habitat. This includes operation and maintenance of recreation facilities, operation of the Oroville Wildlife Area (OWA), support for the Feather River Fish Hatchery, and the release of flows into the Feather River that help support fish and aquatic habitat. Many of the recreation and environmental programs implemented within the FERC project boundary are cooperatively managed or are based on agreements with other agencies (e.g., the California Department of Fish and Game [DFG] and California Department of Parks and Recreation [DPR]).

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